

SUPPORT FOR THE AMENDMENTS

Claims 7 and 10 were previously canceled.

Claim 8 is amended.

Claims 24 and 25 are added.

Support for the amendment to Claims 24 and 25 is provided by paragraphs [0033] and [0104]. Support for new Claims 24 and 25 is provided by paragraphs [0038] and [0050] respectively.

No new matter has been added by the present amendments.

REMARKS

Claims 1-25 are pending in the present application.

The objection to the specification and Claims 1, 8, and 11 due to the use of the term “flexural strength” and the units N/cm is respectfully traversed.

The Examiner has objected to the specification and claims due to the use of the term “flexural strength” as a measure of flexibility, which the Examiner submits is properly related to breaking point. The Examiner also objects to the specification and claims for using the unit N/cm for flexural strength, rather than N/cm^2 . Applicants disagree.

Applicants wish to remind the Examiner that: “Applicants are their own lexicographer” (MPEP §2173.01). MPEP §2173.01 also states that Applicants “can define in the claims what they regard as their invention essentially in whatever terms they choose so long as the terms are not used in ways that are contrary to accepted meanings in the art.” Further, definiteness of claim language must be analyzed, not in a vacuum, but in light of:

- (A) The content of the particular application disclosure;
- (B) The teachings of the prior art; and
- (C) The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made (MPEP §2173.02).

The term “flexural strength” as used in the present invention is not contrary to accepted meanings in the art. Although “flexural strength” may be used to describe “the stress required to break a specimen by exerting a torque on it” as alleged by the Examiner, this is in no way contrary to being a measure of flexibility as the specification and the term itself define the stress necessary to maintain flexibility and easy foldable.

Moreover, the present application clearly defines the “flexural strength” and the associated unit of measure (N/cm) at numerous points through the specification, as well as how the skilled artisan would measure the same. For example, in paragraphs [0032] and [0103], it is stated that in the present invention the flexural strength is measured in three-point bending flexural test. Further, paragraphs [0292], [0305], and [0324] all discuss the measurement of the “flexural strength”. In each of these paragraphs, the following is disclosed:

The flexural strength of the resulting warming device was measured by three point bending flexural test using a tensile/compression tester, RTA-500 from Orientec. A test specimen cut out of the warming device was placed on the tester at a span length of 50 mm between the supports and pressed at the middle with an indenter having a radius of 5 mm at a crosshead speed of 20 mm/min. The flexural strength was obtained from equation:

Flexural strength (N/cm) = Maximum bending load (N)/ sample width (cm)

Thus, based on the disclosure of the present application, Applicants submit that the term “flexural strength” and the associated unit of N/cm are clear and readily understood by the skilled artisan.

Withdrawal of this ground of objection is requested.

The additional clarity objection to Claim 8 is obviated by amendment.

The Examiner has objected to Claim 8 as allegedly being unclear with respect to what the flexural strength applies to. To improve the clarity of Claim 8, Applicants have amended this claim based on paragraphs [0033] and [0104] of the specification to define the flexural strength as being of the warming device. Thus, this criticism is believed to be moot.

Withdrawal of this ground of objection is requested.

The rejections of:

- (a) Claims 1, 2, 5, 6, and 11 under 35 U.S.C. §103(a) over JP 2572621 (JP ‘621) in view of Minami (US 2002/0020406),
- (b) Claim 3 under 35 U.S.C. §103(a) over JP ‘621 in view of Minami and Allison (US 3,448,005),
- (c) Claim 4 under 35 U.S.C. §103(a) over JP ‘621 in view of Minami and JP 2003-102761 (JP ‘761), and
- (d) Claims 8 and 9 under 35 U.S.C. §103(a) over JP ‘621 in view of Minami and JP 1-158762 (JP ‘762),

are respectfully traversed.

In the Office Action, the Examiner makes a series of obviousness rejections based on JP 2572621 (JP ‘621) now taken with Minami, with or without JP 2003-102761 and JP 1-158762.

As you know, based on paragraph [0004] of the specification, it appears that it is conceded that JP ‘621 contains all the claimed components except for the flexural strength limitation, which the Examiner appears to recognize as well. JP ‘621 is discussed in paragraphs [0004] – [0005] of the specification (in correctly identified as “Japanese Patent 2572612”). As stated in the specification and acknowledged by the Examiner, JP ‘621 fails to disclose or suggest the flexural strength limitation, in particular the flexural strength after heat generation has come to an end. The Examiner now appears to recognize, at least in part, that the skilled artisan would not have found it obvious to select the flexural strength in the claimed range to maintain component integrity based on the disclosure of JP ‘621.

Despite the foregoing recognition, the Examiner now cites Minami at paragraph [0019] as allegedly making it obvious to make a flexible heat generating medium that retains

its flexibility before, during and after heat generation. Although paragraph [0019] of Minami disclose that their exothermic medium has a desired flexibility, no particular flexural strength is provided nor is there any disclosure as to how the artisan would modify the disclosure of JP '621 to achieve the claimed flexural strength. As such, that the reliance upon Minami is improper and the Examiner has failed to properly establish or support a *prima facie* case of obviousness.

The Examiner takes the position that it would have been obvious to optimize the flexural strength to arrive at the claimed flexural strength range. Applicants disagree for the reasons already presented at pages 9-13 of the response filed on September 13, 2010. Specifically, Applicants disagree with this allegation for the following restated reason.

The Examiner is reminded that a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) (The claimed wastewater treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result-effective variable.). See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (prior art suggested proportional balancing to achieve desired results in the formation of an alloy). The Examiner has failed to establish that the flexural strength is a variable which achieves a recognized result and that this recognition resides in the art. Indeed, the Examiner's naked allegations of a link between flexural strength and thickness of the sheet material, as well as a desire to control flexural strength to maintain component integrity fails

to show that flexural strength is a variable which achieves a recognized result and that this recognition resides in the art.

Even if it is the Examiner's position that modification of JP '621 would have been within the general abilities of the skilled artisan, a statement that modifications of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made' because the references relied upon teach that all aspects of the claimed invention were individually known in the art" is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). At best, the combined disclosures could be taken as an "invitation to experiment" or could be viewed as providing an "obvious to try" argument; however, "obvious to try" has long been held *not* to constitute obviousness. *In re O'Farrell*, 7 USPQ2d 1673, 1680-81 (Fed. Cir. 1988). A general incentive does not make obvious a particular result, nor does the existence of techniques by which those efforts can be carried out. *In re Deuel*, 34 USPQ2d 1210, 1216 (Fed. Cir. 1995).

KSR International Co. v. Teleflex Inc., 550 U.S. 398, 82 USPQ2d 1385 (2007) does not eliminate the "obvious to try is not obvious" standard, as it clearly states that "obvious to try" may constitute obviousness, but only under certain circumstances. Specifically, *KSR* stated that the fact that a claimed combination of elements was "obvious to try" might show that such combination was obvious under 35 U.S.C. § 103, since, if there is design need or market pressure to solve problem, and there are finite number of identified, predictable solutions, person of ordinary skill in art has good reason to pursue known options within his or her technical grasp, and if this leads to anticipated success, it is likely product of ordinary

skill and common sense, not innovation. However, the Examiner offers nothing to show how these factors apply and whether there would be such an expectation or anticipated success.

Applicants respectfully submit that the Examiner has not offered any evidence that there is a recognized “design need or market pressure to solve the problem”. Indeed, JP ‘621, even taken with JP ‘761 and/or JP ‘762, makes no suggestion that such a need even exists. Further, the Examiner fails to show that there are a “finite number of identified, predictable solutions”. The Examiner also does not provide any evidence that a “person of ordinary skill in art has good reason to pursue known options within his or her technical grasp”. It is clear from JP ‘621, even taken with JP ‘761 and/or JP ‘762, that the artisan had no such reason to modify the various disclosures to arrive at the claimed invention. At best, all that the Examiner appears to provide is that arriving at the combination of components may be within the general abilities of the skilled artisan, but again this is not the proper standard for obviousness (*Ex parte Levengood*). Indeed, absent Applicants disclosure to serve as the guidepost, no objective reason to combine the teachings in a way that would place the artisan in possession of the claimed invention can be found.

Even if the Examiner has properly supported a *prima facie* case of obviousness, which Applicants submit is not the case, Applicants submit that that evidence of unobvious or unexpected advantageous properties, such as superiority in a property the claimed compound shares with the prior art, can rebut *prima facie* obviousness. (MPEP 716.02(a)) “Evidence that a compound is unexpectedly superior in one of a spectrum of common properties . . . can be enough to rebut a *prima facie* case of obviousness.” No set number of examples of superiority is required. *In re Chupp*, 816 F.2d 643, 646, 2 USPQ2d 1437, 1439 (Fed. Cir. 1987)” (see MPEP §716.02(a)). Applicants can rebut a *prima facie* case of obviousness based on overlapping ranges by showing the criticality of the claimed range. "The law is replete

with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

To this end, the Examiner is referred to Table 3-1 on page 87, which clearly show the benefits of the flexural strength limitation, in particular the flexural strength after heat generation has come to an end. For the Examiner's convenience, Table 3-1 is reproduced below:

| | Thickness of Warming Device (mm) | Total Thickness of Heat Generating Sheets (mm) | Total Basis weight of Heat Generating Sheets (g/m ²) | Flexural Strength (N/cm) | |
|-------------------|----------------------------------|--|--|--------------------------|-----------------------|
| | | | | Before Heat Generation | After Heat Generation |
| Example 3-1 | 0.89 | 0.4 | 300 | 0.029 | 0.077 |
| Example 3-2 | 1 | 0.7 | 550 | 0.036 | 0.389 |
| Example 3-3 | 2.41 | 1.8 | 1300 | 0.071 | 0.155 |
| Example 3-4 | 4.38 | 3.5 | 2600 | 0.145 | 0.247 |
| Example 3-5 | 7.0-8.0 | 1.1 | 850 | 0.261 | |
| Comp. Example | 1.5-4.5 | - | 4300 | 0.326 | 9.776 |
| Comp. Example 3-2 | 1.3-1.5 | - | 2200 | 0.900 | 3.391 |

In paragraph [0327] of the specification, the results in Table 3-1 and the importance thereof are provided. Specifically, in paragraph [0327] it is emphasized that “the warming devices of Examples (the present invention) are thin and more flexible both before and after heat generation than those of Comparative Examples.”

Moreover, with respect to the comparison between the claimed invention and the warming devices disclosed in JP ‘621, at paragraph [0005] of the specification states with respect to JP ‘621:

Such a heat generating element of sheet form is used by, for example, putting the heat generating element in an air-permeable holder and applying or attaching the holder to a part of the body. A heat generating molded article of this type loses flexibility because iron powder cakes with progress of the exothermic reaction. *It becomes gradually hard and feels uncomfortable in long time use.* (emphasis added)

In view of the foregoing, Applicants submit that the claimed invention is not obvious in view of JP ‘621, even taken with JP ‘761 and/or JP ‘762. And, even if a *prima facie* case of obviousness were present, which it is not, the evidence provided would clearly rebut the same.

Instead of addressing the foregoing remarks and the evidentiary showing with a cogent reply, the Examiner merely asserts “the instant application has not disclosed any new or unexpected results (criticality) in the flexibility of the article for the range of flexural strength.” Applicants disagree noting that none of JP ‘621, Minami, or the other references provide any disclosure or suggestion of the claimed flexural strength much less provide any reason to believe that there is even a reasonable expectation of the benefits shown in the present application, especially considering the foregoing discussion of the deficiencies of JP ‘621. The burden to explain why the demonstrated results would have been reasonably

expected based on the cited art lies upon the Examiner as a core condition of establishing a *prima facie* case of obviousness. Such a case has not been established.

Moreover, Applicants submit that the claimed invention is patentable over the cited art for yet another reason. On pages 5-6 of the Office Action, the Examiner asserts that any attempt to define the product on the basis of the process of making the product is considered to be a “product-by-process” claim. With respect to the product-by-process limitation, the courts have enunciated that: “Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claims is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 227 USPQ 964 (Fed. Cir. 1985).

There are two important aspects to *In re Thorpe* above. First, the products must be identical or an obvious variant thereof. Second, patentability of a product may not depend on its method of production, but the method of production cannot be disregarded if that method provides a distinct structure or product. Indeed, the Board and the Courts have said as much, which is set forth in MPEP §2113 in relevant part:

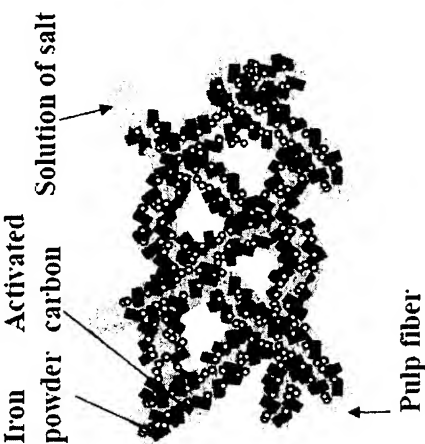
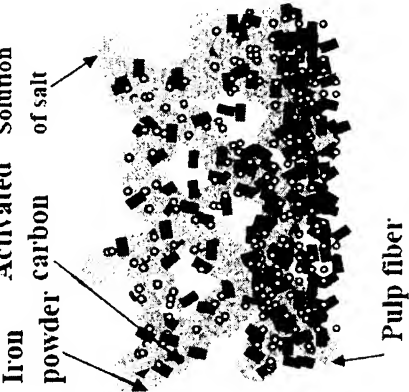
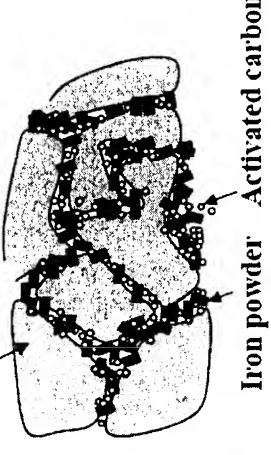
“The structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where... the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product. See, e.g. *In re Garnero*, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979)... The Board stated that the dispositive issue is whether the claimed factor exhibits any unexpected properties compared with the factor disclosed by the prior art.” (citing *Ex parte Gray*, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989)

The foregoing is particularly relevant to the present application as the invention of JP ‘621 includes a filtering step, and therefore most of iron powders are accumulated at the

bottom of the heating element. Accordingly, an iron oxide layer is formed after heat generation, which hardens the heating element. The heating element of Minami has a completely different structure. It is considered that in Minami iron powders are separately present due to compression molding of water-absorptive polymer, so that deposition of iron oxide in clusters is suppressed. The invention of Minami is the technique for utilizing the water-absorptive polymer. Thus, the bending stiffness of the present invention cannot be achieved, even if JP '621 and the technique of Minami are combined.

The heat generating element of the present invention has been produced by the specific production method, so that iron powders and activated carbon are firmly fixed and held on the pulp surface. Therefore, even if a large amount of iron powders are used, the iron powders are not deposited in clusters after the iron oxidizes.

To assist the Examiner in understanding the structural distinction between the claimed invention and the cited art (JP '621 and Minami), Applicants provide the following structural comparison:

| | | | |
|----------------|--|---|--|
| | The present invention | JP-621 | Minami ('406) |
| |  |  |  |
| Structure | <p>Pulp absorbs solution of salt. Iron powder and activated carbon are fixed to pulp surface.</p> | <p>In a sample of JP-621, filtering is done using filter paper, so that iron powders are densely accumulated at the bottom.</p> | <p>Due to compression molding, iron powder and activated carbon are present in the space between absorbent polymers.</p> |
| After reaction | <p>Iron oxidizes and covers pulp surface, but high surface area of pulp prevents iron oxide from being deposited in cluster.</p> | <p>Thick layer of oxidized iron is formed and becomes hard, due to accumulation of iron oxidation and bonding.</p> | <p>It is considered that deposition of iron oxide in clusters is suppressed due to separation of iron by water-absorptive Polymer.</p> |

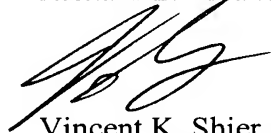
Accordingly, for this addition reason, Applicants submit that the claimed invention differs structurally from the disclosure of JP '621 and Minami. Moreover, the claimed invention would not have been obvious even if JP '621 were viewed together with Minami or any of Allison, JP '761, or JP '762.

In view of the foregoing, withdrawal of these grounds of rejection is requested.

Applicants submit that the present application is in condition for allowance. Early notification to this effect is respectfully requested.

Respectfully submitted,

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